



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/605,935

11/06/2003

Leon Chernyak

2934

34069 7590 01/29/2007
LEON CHERNYAK
112 ACADEMY HILL RD. #1
BRIGHTON, MA 02135

EXAMINER

LANIER, BENJAMIN E

ART UNIT

PAPER NUMBER

2132

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
--	-----------	---------------

3 MONTHS

01/29/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/605,935	Applicant(s) CHERNYAK ET AL.	
	Examiner Benjamin E. Lanier	Art Unit 2132	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-24, 29-31 and 39-43 is/are rejected.
- 7) ☒ Claim(s) 25-28 and 32-38 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 November 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because it exceeds 150 words in length.

Correction is required. See MPEP § 608.01(b).

Oath/Declaration

2. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

There are no inventor signatures or a showing or indication that it was signed (37 CFR 1.63).

Claim Objections

3. Claims 25-28, 32-38 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.
4. Claim 42 is objected to because of the following informalities: Claim 42 is a system claimed but is claimed as a method. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Art Unit: 2132

7. Claim 12 recites the limitation "said index" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-24, 29-31, 39, 40-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Hoffstein, U.S. Patent No. 6,298,137. Referring to claim 1, 6, 8, 10, 11-14, 16-24, 29-31, 40-42, Hoffstein discloses a ring-based public key cryptosystem where communication of information is provided between users by generating a ring R , ideals P and Q in R , a set of coset representatives C_q for the ring R modulo the ideal Q , and a set of coset representatives C_p for the ring R modulo the ideal P , generating at least one public key element h_1, \dots, h_k in the ring R as a function of at least two private key elements f_1, \dots, f_n in R and the ideal Q of the first user (Abstract), generating an element e in R as a function of the ideals P and Q , and the public key elements h_1, \dots, h_k (Abstract), a private message element m in R , and at least one private random element ϕ_1, \dots, ϕ_l of the second user, which meets the limitation of generating a module V over a ring R , generating an outer component P of encryption key that includes sequence (p_1, p_2, \dots, p_k) where each member p_j of the sequence belongs to the set $\{1, 2, \dots, m\}$, generating an inner component Q of encryption key that includes elements v_1, v_2, \dots, v_m of V and automorphisms g_1, g_2, \dots, g_m of V , generating the encryption key $K=(P, Q)$ where P is the outer component and Q is the inner component, generating an encryption automorphism T of V based

Art Unit: 2132

on the encryption key K , where T includes a composition of certain automorphisms T_1, T_2, \dots, T_m of the module V , which composition is performed in the order prescribed by P , generating automorphisms T_1, T_2, \dots, T_m of finite orders, generation of each automorphism T_i of the order 2, generating an encrypted message element E as a function of a message element M in V and of the encryption automorphism T . Transmitting the element e from the second user to the first user, such that the first user can determine the message element m by computing a result A in R of evaluating a function F of E, f_1, \dots, f_n , computing a coset representative a of A in the set of coset representatives C_q , computing a result B of evaluating a function G of a, f_1, \dots, f_n , computing a coset representative a of A in the set of coset representative b of B in the set of coset representatives C_q , and computing a result c in the set of coset representatives C_p of evaluating a function H of b, f_1, \dots, f_n (Abstract), which meets the limitation of transmitting the encrypted message element along with the outer component P from one user to another, generating the outer component P of decryption key that includes sequence $(pk, pk-1, \dots, p_1)$, generating the decryption key $K' = (P'; Q')$, where P' is the outer component of the decryption key and Q' is the inner component of the decryption key which is equal to the inner component Q of the encryption key, generating a decryption automorphism T_d of V based on the decryption key K' , where T_d includes a composition of automorphism T_1, T_2, \dots, T_m , which composition is performed in the order prescribed by P' , determining the message element M as a function of the encrypted message element E and of the decryption automorphism T_d , where the function is the same as that one used in generation of E .

Art Unit: 2132

Referring to claim 2, Hoffstein discloses that the ring is a ring of polynomials with integer coefficient modulo the ideal consisting of all multiples of $(x^n) - 1$ (Col. 5, lines 46-49), which meets the limitation of the ring R is any commutative or non-commutative ring.

Referring to claim 3, Hoffstein discloses that an element in ring R is a vector (Col. 4, lines 56-59), which meets the limitation of V is a projective module over the ring R .

Referring to claim 4, Hoffstein discloses that dimension of the system is greater than 1 (Col. 10, lines 35-39), which meets the limitation of V is a free R -module of dimension n , and where n is an integer greater than 1.

Referring to claim 5, Hoffstein discloses that the vector is an element comprising a set of elements in the ring R (Col. 4, lines 55-64), which meets the limitation of the R -module V is the standard free module R , where V is the set of all n -tuples $x=[x_1, x_2, \dots, x_n]$ of elements of R .

Referring to claim 7, Hoffstein discloses that elements f and g of the ring are generated and generating element F_q , which is an inverse of $f \pmod{q}$, and generating F_p , which is an inverse of $f \pmod{p}$ (Col. 3, lines 2-5), which meets the limitation of said ring R is the skew field of quaternions.

Referring to claim 9, Hoffstein discloses that the ring is a ring of matrices (Col. 8, lines 64-65), which meets the limitation of the ring R is the ring of matrices over the field of real numbers.

Referring to claims 15, 39, 43, Hoffstein discloses that the encrypted message is transmitted from one user to another over a channel (Figure 1 & Col. 11, lines 15-16).

Conclusion

Art Unit: 2132

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Paar, U.S. Patent No. 7,069,287

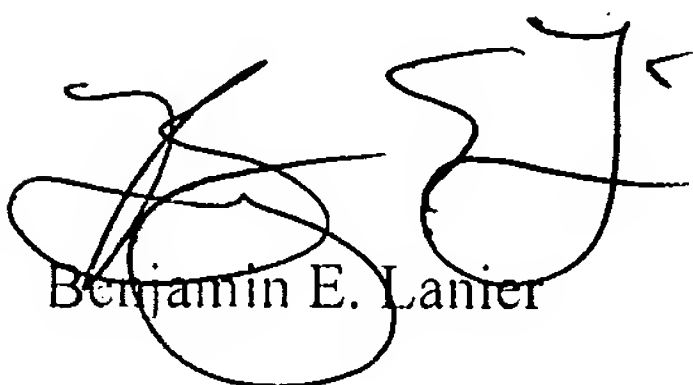
Koh, U.S. Patent No. 7,136,484

Paeng, U.S. Publication No. 2004/0156498

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin E. Lanier whose telephone number is 571-272-3805. The examiner can normally be reached on M-Th 7:30am-5:00pm, F 7:30am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gilberto Barron can be reached on 571-272-3799. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Benjamin E. Lanier